THURSDAY, JUNE 30, 1887.

FORESTRY.

School of Forestry in Germany, with Addenda relating to a desiderated British National School of Forestry. By John Croumbie Brown, LL.D. (Edinburgh: Oliver and Boyd; London: Simpkin, Marshall, and Co., 1887.)

"SILVER and gold have I not; but what I have I am prepared to give." This is what the author tells us towards the end of the present volume, and there can be no doubt that he has fully acted up to his promise. He has now presented the public with what appears to be the fifteenth volume on subjects of forestry, and he offers to publish some thirty additional volumes if the necessary inducement is held out. Surely Dr. Brown must be extremely philanthropic, or else the publishing of books is considerably cheaper than we have so far believed it to be. These works, published and unpublished, deal with forest subjects in almost every known country of the earth, and we wonder how Dr. Brown has managed to collect all the information. The above-mentioned offer seems to have been made in succession to a variety of bodies, but none of them have availed themselves of it, and the world at large must, for the present, be satisfied with the information contained in the fifteen volumes which have so far passed through the press. That, however, extends over a considerable range, including information regarding forests and schools of forestry in Germany, France, Spain, Norway, Russia, and the Cape; on modern forest economy; the effects of forests on humidity of climate; hydrology of South Africa, &c., &c. Now, it appears to us either that Dr. Brown's works are deficient in interest, or that his countrymen are very ungrateful in not availing themselves of his handsome offer. If we follow the dictates of common-sense, we must, it seems, decide in favour of the former alternative.

We hear occasionally of a Parliamentary Committee which considers "whether, by the establishment of a forest school, or otherwise, our woodlands could be rendered more remunerative"; or a feeble effort is made to start a National British Forest School in Edinburgh; or a languishing controversy turns up, whether the junior officers of the Indian Forest Department should be educated in France, Germany, or at home. But on the whole these matters do not excite much curiosity or interest. Parliamentary Committees on the subject die away without making any proposals beyond suggesting the re-appointment of a similar Committee in the next Parliament, which event may come to pass if members have no bigger game to hunt; Edinburgh is still without its forest school, and a forestry branch has actually been added to the Royal Indian Engineering College at Cooper's Hill, for the education of Indian forest officers, without many people being aware of the fact. The explanation of all this indifference is that even the perseverance of Dr. Brown has not yet succeeded in convincing Englishmen of the importance of afforestation. The mere fact that it is of importance in various Continental countries and in several British dependencies is not sufficient to show that the same holds good in these islands, and it will be as well to say something more on this subject.

Forests are, in the economy of Nature and of man, of direct and indirect value: the former through their products, and the latter through their influence upon climate, the regulation of the water-supply, the healthiness of a country, and allied phenomena. These islands are rich in iron ore, coal, and peat, wherewith to produce more iron than is required by the country, and to render the question of firewood of very subordinate importance. What is more, they are so situated that the importation of wood and other forest-produce is comparatively easy and cheap, owing to their sea-bound position, and a multitude of railways and other means of communication scattered over the country. At any rate, we have received, so far, as much timber as we require, and at a lower rate than it has been possible to produce it at home. Whether this state of things will last for ever is a different question; but it rests with us to initiate measures in our dependencies (such as Canada) which will secure us against a timber famine as long as the British Navy rules the sea. After all, the whole question turns on this point, and the decline of the British Navy would raise other issues of such immense importance, that the question of the future timber-supply of this country may well be added without producing a nightmare in even the most imaginative mind.

Again, in respect of the indirect effects of forests, Englishmen may rest assured that the absence of woodlands will not ruin their country. The climate and rainfall of these islands are principally governed by their geographical position. Strong moist air-currents come to us direct from the sea, and, compared with their effects, those of forests, even if 20 per cent. of the total area of the United Kingdom were covered with them, would be found comparatively small. Nor need we cry for forests on account of the general regulation of moisture; because, thanks to an ample rainfall and a comparatively moist state of the atmosphere, our waste lands are generally covered with heath, mosses, and other growth, which act as powerful retainers of moisture. To add a crop of trees to these would make comparatively little difference, especially as afforestation would, in many cases, have to be accompanied by the draining of the soil.

In some respects, however, an increase of our woodlands might be highly beneficial. They would afford protection not only to cattle and birds (the latter being the great destroyers of noxious insects), but also to agricultural lands which are at present exposed to strong sea breezes. A judicious distribution of woodlands along the coasts (especially the western) of these islands would no doubt be followed by beneficial results in this respect. Again, our waste lands (occupying upwards of 40,000 square miles, equal to 34 per cent of the total area), might be made more remunerative than they are at present, and their afforestation would provide a very considerable amount of work, not only by the creation and subsequent management and working of the forests, but also by the springing up of a variety of industries dependent on the existence and sustained yield of woodlands. We take this opportunity to recommend the subject to the careful attention of those who are about to legislate once more on

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the Irish land question. Experience has shown that the climate of a considerable portion of Ireland (especially in the coast districts) is not sufficiently favourable to produce crops which will permanently support the cultivator and yield large rents to the owners of the soil. In such cases the afforestation of surplus lands (that is to say, lands not required for agricultural operations) might prove a useful auxiliary in the solution of the Irish land question, by providing additional work which would enable the small cultivator to earn a day's wages whenever his presence was not required on his holding. Instead of sitting idle during a good portion of the winter, he could appreciably augment his income (and capacity to pay rent), without being obliged to leave his home in search of distant work

However, we must return to Dr. Brown. Our author has in the book under notice placed before the few who may be interested in the question, a fair account of how forest schools are arranged in Germany, the country where forest science has attained its highest development. The arrangement of studies at the several schools is given in considerable detail, and the book shows the high standard of education of German forest officers. Some of the schools are independent institutions situated in or near extensive forests, while others form part of Universities or technical Colleges. In the former case the education takes generally a more practical turn, while under the latter arrangement a higher standard of general education is likely to be secured. Dr. Brown is in favour of attaching the desired British forest school to a University or other similar educational establishment. In our opinion the decision on this point should depend on the class of men whom it is desired to educate. The ordinary foresters required by British landowners for the management of their woodlands are men who could not be enrolled as members of a University College; and their education must be of a more simple description, with a strong practical tendency. But men who are to join the general administration of India should attain a high standard of education, and a forest school for their benefit might well be attached to a University or to a high-class College. Unless such men are fit to take their proper place amongst the rest of the governing staff of the country, they will not be able to do justice to the work which will be intrusted to them on their arrival in India.

Both wants cannot be met by one set of men. The employment of men who have merely had a practical training might be disastrous to the Indian forests. On the other hand, British landowners would decline to receive men who, in consequence of a College education, would be above the ordinary work of a British forester, not to mention the fact that such men would expect higher rates of pay than the owners of woodlands would be willing to give them. In short, the course of studies to be followed by each of these two classes of men must be arranged on different lines. In either case, however, a tract of well-managed woodlands should be situated close to the seat of the school. To do without such a training-ground would be equivalent to training medical men without a hospital ready at hand. On this point we are decidedly at issue with Dr. Brown, who, in declaring such a school-forest unnecessary, has, in our opinion, only proved that he has failed to grasp the essential requirements of a forester's training. At the same time, the reader of Dr. Brown's books cannot help wondering at the marvellous industry employed by the venerable author in the compilation of his various works on Continental forest schools. Such energy and devotion are deserving of a better reward than they are likely to meet with, owing to the apathy on forest questions existing in this country. Sw.

OBSERVATIONS AT GODTHAAB.

Observations Internationales Polaires, 1882–83. "Expédition Danoise: Observations faites a Godthaab sous la direction de Adam Paulsen." (Copenhague, 1886.)

THIS part of the publications of the Meteorological Institute of Denmark deals with the meteorological, tidal, and other observations made in 1882–83 by the Danish Arctic Expedition at Godthaab (64° 11′ N. lat.; 51° 44′ W. long.). The pages devoted to meteorology present us with detailed tabular views of the hourly observations of atmospheric pressure, temperature, and humidity, and the direction and velocity of the wind These are prefaced by an interesting and full discussion of the atmospheric pressure (illustrated with 186 pressure and wind charts of Greenland), which includes a valuable comparison of the observations of that year with those at all the stations since 1866.

In summer the mean lowest temperature, 38°·2, occurs at 2 a.m. and the highest, 43°·1, at 2 p.m., the daily range being thus 4°·9. On the other hand, the mean daily range of temperature is extremely small in winter, owing to the proximity of Godthaab to the Arctic circle. Thus the highest and lowest hourly temperatures were respectively in December, 19°·5 at 10 a.m. and 18°·0 at 10 p.m.; in January, 15°·1 at 5 p.m. and 14°·1 at 1 a.m.: and in February 4°·4 at 6 p.m. and 3°·7 at 3 p.m. Thus in February the mean warmest and coldest hour of the day show a difference of only 0°·7, and are only three hours apart from each other. Quite different is the amount of the daily range of temperature deduced from the maxima and minima of the month; in February the mean of all the highest was 9°·0 and of the lowest 0°·3, the difference being 8°·7. In these months the changes of temperature are but little influenced by the sun, being almost altogether occasioned by the passage of the cyclones and anticyclones. It is this practical elimination of the influence of the sun which gives a peculiar value to the temperature and hygrometric observations of such stations when any serious attempt is made to assign to these important elements the parts they play in the history of storms. The mean annual temperature calculated from the twenty-four hourly observations is only about one-tenth of a degree lower than that from the daily maxima and minima. In all the months the agreement is close, the greatest difference being 0°·5 in February and August; and in seven of the months the difference did not exceed 0°·1.

The results giving the variations in the hourly velocity of the wind are interesting as showing that such diurnal variation as may exist will require a number of years' observations to show it clearly, this periodicity being masked in an unusual degree by the high winds which accompany the low-pressure systems of Greenland.

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